



The Federal Government Debt: Its Size and Economic Significance

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Summary

After several years of surpluses in the late 1990s, the federal budget has been in deficit since FY2001. Deficits represent the additional borrowing required in each year to bridge the gap between tax revenues and spending outlays. Each deficit adds to the already existing stock of outstanding federal debt.

Some of those deficits may have seemed large at the time, but the budget deficit for FY2009 was unprecedented, in dollar terms, and the FY2010 deficit is also expected to be much larger than those of past years. The prospect of such rapid growth in the federal debt may seem alarming, and some might wonder how much the debt can grow before it poses significant economic risks.

In a slack economy, federal borrowing and spending can stimulate growth in output in the short run. As the economy approaches full employment, federal government borrowing adds to total credit demand and tends to push up interest rates. Higher interest rates increase the cost of financing new investment in plant and equipment and thus may tend to reduce the stock of productive capital below what it might otherwise have been. That would tend to reduce the long-run rate of growth.

In the long run, the relationship between the growth rate of the federal debt and the overall rate of economic growth is critical to economic stability. As long as the debt grows more rapidly than output, the ratio of debt to gross domestic product (GDP) will rise. Debt growth in excess of economic growth is ultimately unsustainable. Whether the debt-to-GDP ratio is on such a path depends on the size of the budget deficit, the rate of interest, and the rate of growth in GDP.

What matters most, as far as economic stability is concerned, is what investors believe to be the long-run outlook for the debt-to-GDP ratio. If large deficits are expected to persist, or if the interest rate on the debt is expected to exceed the growth rate indefinitely, then at some point the federal government may begin to find it more difficult to sell new securities.

Should the federal government be unable to find private sector buyers, the Federal Reserve might buy Treasury securities in order to sustain their marketability. Should it decide to do so, then the threat is no longer one of government insolvency, but rather of inflation.

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Introduction

After several years of surpluses in the late 1990s, the federal budget has been in deficit since FY2001. Deficits represent new borrowing required in each year to bridge the gap between tax revenues and spending outlays. Each deficit adds to the already existing stock of outstanding federal debt.

Some of the deficits in recent years may have seemed large at the time, but the budget deficit for FY2009 was unprecedented, in dollar terms, and the deficit in FY2010 is expected to be considerably larger than in past years as well. The prospect of such rapid growth in the federal debt may seem alarming, and some might wonder how large, or how rapidly, the debt might grow before it poses significant economic risks.

One way in which policymakers have expressed their concerns over the level of federal government debt is in the form of a statutory debt limit.¹ Although the debt limit tends to rise as necessary, those increases serve as occasions to consider the debt itself separately from the policies that account for it.

There is more than one measure of federal debt, and that may be a source of confusion. This report explains the different measures of the U.S. government debt, discusses the historical growth in the debt, identifies the current owners of the debt, presents comparisons with government debt in other countries, and examines the potential economic risks associated with a growing federal debt.

Measuring the Federal Debt

The statutory debt limit is a ceiling set by Congress restricting the total amount of federal debt outstanding. Gross federal debt, with some minor adjustments, is the measure that is subject to the limit.

Although gross federal debt is the broadest measure of the debt, it may not be the most important one. Not all of the gross debt actually represents past borrowing in credit markets. Some of the debt is held by the so-called trust funds, primarily the one for Social Security, but also others such as unemployment insurance, the highway trust fund, and one for federal employee pensions. Relatively small amounts of debt are also held by selected federal agencies.

The assets held by the trust funds consist entirely of non-marketable federal debt. That debt exists only as a bookkeeping entry, and does not reflect past borrowing in credit markets. The trust fund balances represent the cumulative amount that the government has not had to borrow in credit markets since they were simply credited to the trust fund accounts.²

The debt measure that is relevant in an economic sense is debt held by the public. This is the measure of debt that has actually been sold in credit markets, and which has influenced interest

¹ CRS Report RL31967, *The Debt Limit: History and Recent Increases*, by D. Andrew Austin and Mindy R. Levit.

² Interest paid on the trust fund accounts is also strictly a bookkeeping entry and does not constitute an actual outlay of the federal government.

rates and private investment decisions. At the beginning of calendar 2010, the debt held by the public was \$7.8 trillion, whereas total gross federal debt was \$12.3 trillion.

The dollar amount of the debt, however large it may seem to be, is not the best measure of its burden on the economy. Just as an individual with a larger income can afford to take on more debt, the importance of the debt can only be measured relative to the overall size of the economy.³ For a given amount of debt, the larger the potential tax base is, the less of a burden on the economy the interest payments on that debt will be. The most common way of putting the size of the debt in perspective is to express it as a percentage of total gross domestic product (GDP).

Recent History of the Federal Debt

Prior to World War II, the federal budget was in surplus about as often as it was in deficit. Some of the largest increases in the debt resulted from wartime spending. There were large increases in the debt held by the public related to the Civil War and also to World War I. Since World War II, the federal budget has been in deficit most of the time and the debt has steadily grown. Since 1940, revenues exceeded outlays in only 12 years.⁴

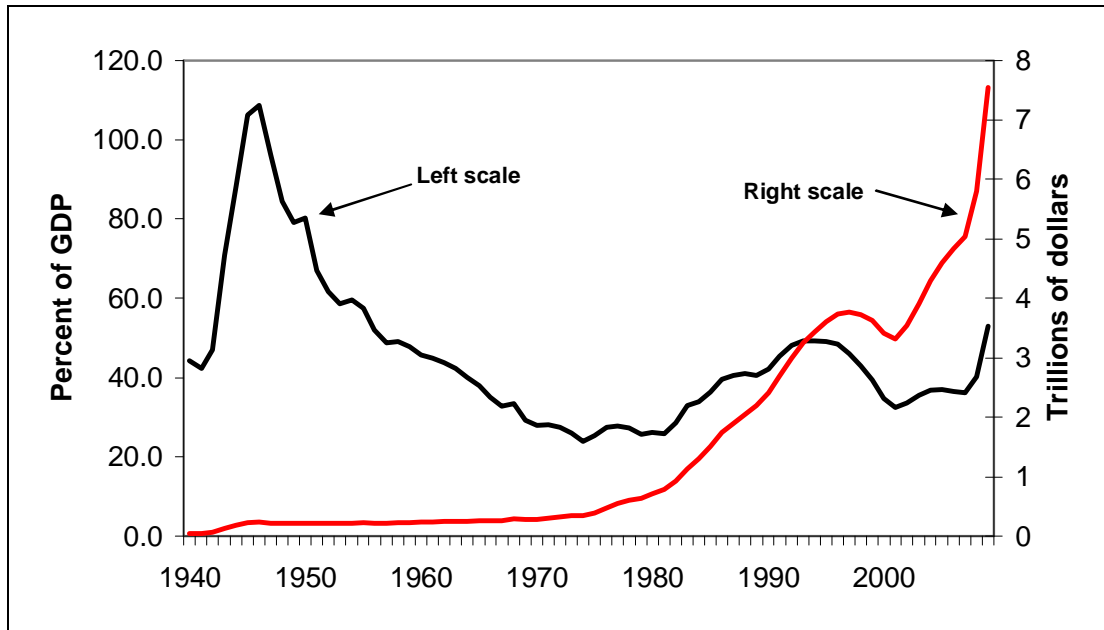
Figure 1 shows gross federal debt held by the public since 1940. The red line plots the dollar value of the debt held by the public since 1940. These are nominal amounts (i.e., they have not been adjusted for inflation). The black line shows the debt held by the public as a percentage of GDP.

The dollar value of the debt rose gradually until the late 1970s and early 1980s, at which time its growth accelerated. It peaked in 1997, fell through 2001, but since then has reached a new high each year. Measuring the debt relative to GDP tells a different story. The surge in debt to finance the costs of World War II is much more pronounced and indicates that recent debt levels are far from unprecedented, in terms of the burden to the economy. Following that surge and until the late 1970s, however, debt grew much less rapidly than did the overall economy and so the ratio fell steadily. Between 1980 and 1995, the debt grew more rapidly than the economy so the ratio rose. Between 1995 and 2001, with the decline in debt levels, the ratio fell. Between 2002 and 2005, it rose again, but then fell in 2006 and 2007 even with significant deficits. It is above the recent peak reached in 1993 but, for now, it is below what it was in 1955. Given current projections the debt-to-GDP ratio seems likely to continue to rise over the next few years.

³ Prospects for economic growth may also affect perceptions about the advisability of taking on more debt.

⁴ See also CRS Report RL34712, *Ebbs and Flows of Federal Debt*, by Mindy R. Levit.

Figure 1. Federal Debt Held by the Public



Source: Congressional Budget Office.

The Short- and Long-Run Effects of Federal Borrowing

In the short run, growth in the public debt (i.e., budget deficits) affects the composition of economic output. When there is considerable slack in the economy, the main effect of an increase in the deficit may be to stimulate demand and raise output. That's the reasoning behind the fiscal stimulus in the American Recovery and Reinvestment Act of 2009 (P.L. 111-5).

Eventually, however, as the economy approaches full employment, and credit markets tighten, federal government borrowing tends to push up interest rates. Higher interest rates increase the cost of financing new investment in plant and equipment and thus may tend to reduce the stock of productive capital below what it might otherwise have been. Thus, there may be a shift in the composition of output towards consumption and away from investment. Consumption that might otherwise have been deferred (i.e., saving) is reduced and current consumption rises.

The higher interest rates may also have an effect on international capital flows, and thus on the trade balance. Other things being equal, they make dollar-denominated assets more attractive to foreign investors because of the relatively higher yield. Foreign investors, in order to buy U.S. securities, must first buy dollars with which to pay for them. The increased demand for dollars in exchange markets tends to push up the price of the dollar in terms of other currencies.⁵

⁵ In the current international economic environment a desire for quality investments may also affect capital flows. See CRS Report R40007, *Financial Market Turmoil and U.S. Macroeconomic Performance*, by Craig K. Elwell.

The increase in the exchange value of the dollar has two mutually reinforcing effects. First, the price of imported goods falls because it takes fewer dollars to buy the same quantity of goods and services abroad. Lower prices for imported goods means, other things being equal, that U.S. consumers spend more on goods and services produced abroad. Second, the price of U.S.-produced goods and services rises for foreigners because the amount of foreign currency required to buy a given quantity of U.S. exports rises. Because U.S. exports are more expensive, they tend to decline.

Both the rise in imports and the drop in exports contribute to a larger trade deficit. Because of the increased domestic borrowing associated with the rising federal debt, firms that sell a significant share of their production abroad, and those that compete directly with foreign firms selling in the United States, experience a drop in the demand for their goods and services. The increased capital inflow, however, may offset to some extent the reduction in investment that might otherwise result from the increase in domestic credit demand.⁶

Who Owns the Federal Debt?

Because Treasury securities are seen as relatively safe, they are held by a wide range of investors. Next to cash they are the most liquid asset, meaning they can easily be converted to cash when necessary, on short notice. Because of that, investors hold them as a way of managing the overall risk associated with their portfolios.

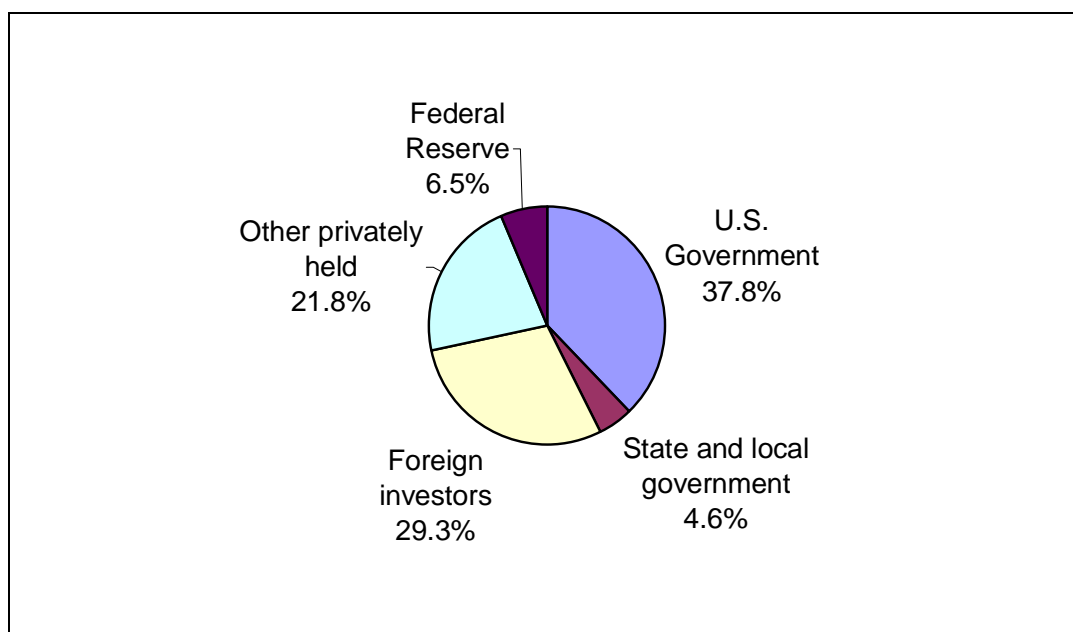
Figure 2 shows a breakdown of the holders of the outstanding gross federal debt. The U.S. government is itself the largest holder of the debt, mainly in the trust funds. Included in the “other” category are financial institutions, including banks, insurance companies, and mutual funds, as well as private pension funds. The Federal Reserve holds a significant share of the debt. The Federal Reserve buys and sells Treasury securities in its open market operations in order to manage short-term interest rates.⁷ State and local governments hold Treasury securities as well, mainly in pension funds for their employees. Foreign investors hold 29.3% of the debt.

The Treasury Department publishes estimates of major foreign holdings of Treasury securities. Mainland China, Japan, and the United Kingdom are the three largest holders. **Table 1** presents recent data for countries with the largest holdings of Treasury securities.

⁶In the longer run, as the amount of foreign holdings of U.S. assets increases, an increasing share of U.S. income will flow abroad in the form of interest, dividend, and rent payments. While this outflow does not necessarily mean a decline in U.S. living standards, it may mean that future living standards will not be as high as they would have been if a greater share of domestic investment had been financed by borrowing at home instead of abroad.

⁷ Recently the share of Treasury securities held by the Federal Reserve has fallen. In an effort to add liquidity to credit markets, the Federal Reserve has swapped substantial amounts of Treasury securities for relatively riskier assets that were held by other financial institutions. See CRS Report RL34427, *Financial Turmoil: Federal Reserve Policy Responses*, by Marc Labonte.

Figure 2. Ownership of the Gross Federal Debt, June 2009



Source: Department of the Treasury.

Table 1. Major Foreign Holders of Treasury Securities as of November 2009

Country	Holdings (billions of dollars)	Percentage of Foreign Held Debt
Total Foreign Held	3,597.5	100.0
Mainland China	789.6	21.9
Japan	757.3	21.1
United Kingdom	277.5	7.7
Oil Exporters	187.7	5.2
Caribbean Banking Centers	179.8	5.0
Brazil	157.1	4.4
Hong Kong	146.2	4.1
Russia	128.1	3.6
Luxembourg	91.7	2.5
Taiwan	78.4	2.2
Switzerland	63.0	1.8
Germany	53.6	1.5

Source: Department of the Treasury; Federal Reserve Board.

Notes: Oil Exporters include Ecuador; Venezuela; Indonesia; Bahrain; Iran; Iraq; Kuwait; Oman; Qatar; Saudi Arabia; the United Arab Emirates; Algeria; Gabon; Libya; and Nigeria.

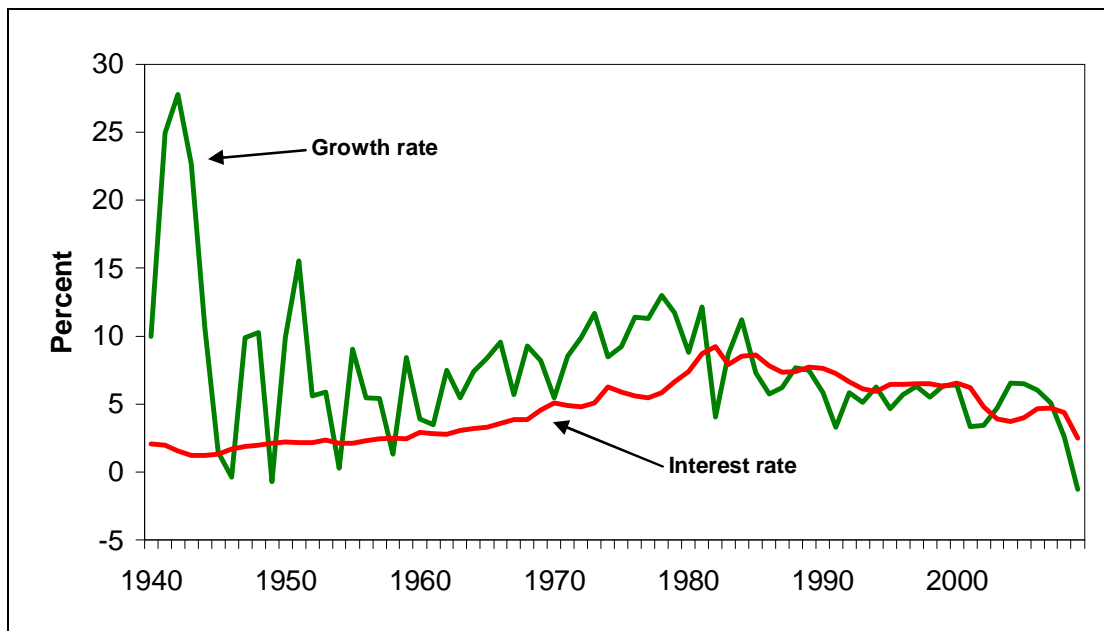
The Relationship Between Federal Debt and GDP

In the long run, the relationship between the growth rate of the federal debt and the overall rate of economic growth is critical to economic stability. As long as the debt grows more rapidly than output, the ratio of debt to GDP will rise. Perpetual debt growth in excess of economic growth is inherently unsustainable.

Whether the debt-to-GDP ratio is on such a path depends on the budget deficit, of course, but also on the rate of interest and the rate of growth in GDP.⁸ To illustrate, consider the case where the budget is balanced except for the interest payment on the debt. In other words, the budget deficit is equal to the interest payment. In this case, the debt would grow each year by an amount equal to the interest cost of financing the debt. Thus, the growth rate of the debt would equal the interest rate. If the interest rate were higher than the growth rate of GDP, then the debt would grow faster than GDP and the ratio of debt to GDP would rise. If, instead, the interest rate stays below the economic growth rate, then the ratio of debt to GDP would fall.

Figure 3 compares the average interest rate on the federal debt with the growth rate of nominal GDP. This measure of economic growth reflects changes in both real output and inflation. The green line shows the annual growth rate of nominal GDP, and the red line shows the average interest rate on the outstanding federal debt held by the public.

Figure 3. Economic Growth and Interest on the Federal Debt



Source: Department of Commerce, Bureau of Economic Analysis; Congressional Budget Office.

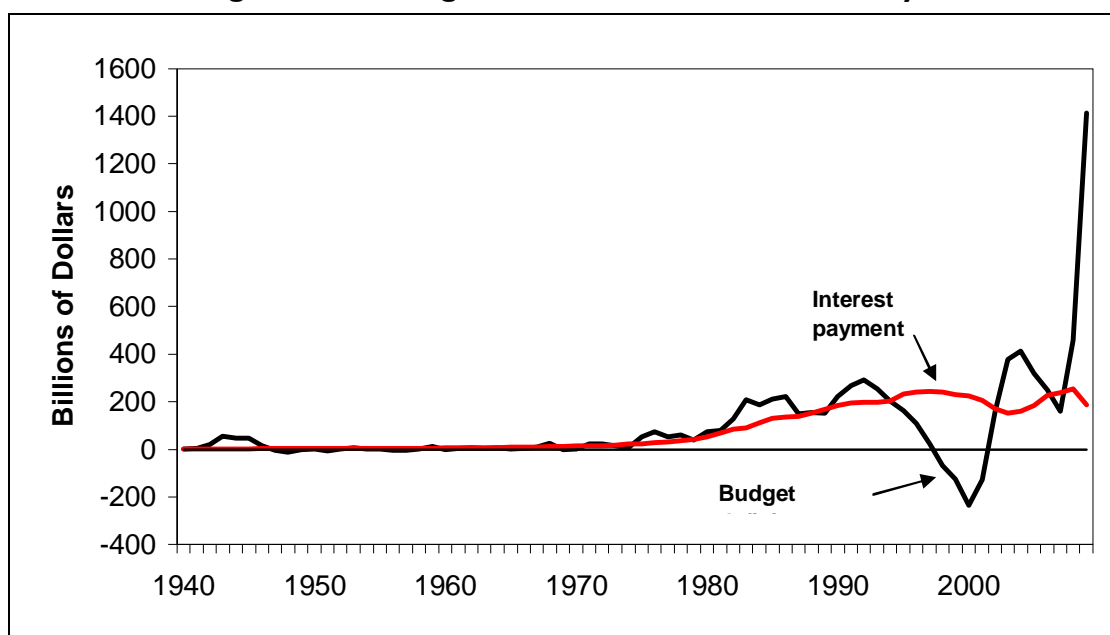
For most of the period between 1940 and 1980, the interest rate remained well below the growth rate of the economy. For much of the past 25 years, however, the interest rate has been above the growth rate, which through the mid-1990s contributed to the rising debt-to-GDP ratio. If the

⁸ In the current discussion, both the growth rate and the interest rate are nominal (i.e., not adjusted for inflation).

interest rate is less than the growth rate, it is possible for the debt ratio to fall even with a modest budget deficit. When the interest rate is above the growth rate, a surplus is required to keep the debt-to-GDP ratio from rising.

Consider the case where the budget deficit is larger than the interest payment on the debt. When the budget deficit is larger than the interest payment, the difference between the two is sometimes referred to as the “primary” deficit. In that case, the growth rate of the debt would be larger than the interest rate, and so, even with an interest rate below the GDP growth rate, the debt-to-GDP ratio could still rise. **Figure 4** shows the relationship between the budget deficit and the interest payment on the debt from 1940 through 2009. The black line shows the deficit (which in some cases is negative, i.e., a surplus), and the red line shows the interest payment.

Figure 4. The Budget Deficit and Net Interest Outlays



Source: Congressional Budget Office.

Although there were clearly exceptions, the overall pattern until recently was for the budget deficit and the interest payment to rise in tandem, which is not surprising since the deficits represents additional debt which requires a larger interest payment. In the late 1990s, when the budget was in surplus (i.e., a negative deficit), the budget deficit was clearly substantially less than the interest payment which contributed to the decline in the debt-GDP ratio. Since FY2003 that situation has reversed, and except for FY2007 the deficit has been larger than the interest payment.

What are the Risks of Rising Federal Debt?

The federal government usually has little difficulty in marketing securities when revenues fall short of outlays. As long as there is a ready market for federal debt, the risks are small.

What matters most, as far as economic stability is concerned, is what investors believe the long-run trend in the debt-GDP ratio to be. If large primary deficits (deficits in excess of the net interest payment) are expected to persist, or if the interest rate on the debt is expected to exceed the growth rate indefinitely, then at some point the federal government may find it more and more difficult to sell new securities. In other words, it may become harder for the federal government to find willing lenders to finance its deficits. At worst, private investors might come to doubt the federal government's ability even to meet its interest payments, and would be reluctant, if not completely unwilling, to hold government bonds.

Inability to borrow money in credit markets can be fatal to private businesses. Firms that are losing money and cannot find willing lenders are on the road to bankruptcy. The federal government, however, has a source of credit not available to individual businesses, the Federal Reserve Bank.

There are two possible outcomes should the federal government be unable to find private sector buyers, either domestic or foreign, for its securities. First, the federal government could simply find itself unable to meet all of its obligations. In that case outlays would have to fall unless taxes were increased enough to eliminate the shortfall. Second, rather than allow the government to default, the Federal Reserve might buy sufficient Treasury securities in order to sustain their marketability.⁹

Although subject to congressional oversight, the Federal Reserve is independent and under no legal obligation to ensure the sale of government securities. But should it decide to do so, then the threat is no longer one of government insolvency, but rather of inflation.

When the Federal Reserve buys Treasury securities, it increases the stock of reserves to commercial banks. Those increased reserves, in turn, increase the banks' capacity to lend money and create demand deposits, increasing the stock of money in circulation. The historical record demonstrates that continued financing of large government budget deficits by "printing money" runs a substantial risk of rapidly accelerating inflation.

Current and projected federal debt, however, are both short of the levels thought to be associated with this risk. For the moment, federal debt remains well below the level it reached following World War II.

History provides a number of examples where large public sector debt led to serious economic consequences. In the aftermath of World War I, four countries experienced episodes of rapid inflation directly attributable to the central bank financing of very large budget deficits through money creation: Germany, Poland, Austria, and Hungary. In each of these cases, more than one-half of the total central government expenditures was deficit financed. As a result, the public lost confidence in the governments' ability to bring growth in public sector debt under control by either raising taxes or cutting expenditures.¹⁰

⁹ By law (section 14(b) of the Federal Reserve Act), the Federal Reserve can only buy Treasury securities in the open market. It cannot buy them directly from the Treasury.

¹⁰ Thomas J. Sargent, "The Ends of Four Big Inflation," in Robert Hall, ed., *Inflation: Causes and Effects* (National Bureau of Economic Research, 1982), pp. 41-97.

Immediately following World War II, Hungary experienced the most extreme episode of inflation on record. Between July 1945 and August 1946, the price level in Hungary rose by a factor of 3×10^{25} . As is characteristic of instances of very rapid inflation, tax revenues fell far short of public expenditures during this time. For much of the period, revenues covered less than 10% of total expenditures.¹¹

During the mid-1980s, Bolivia experienced an episode of very rapid inflation. In 1984, general government revenues represented less than 20% of total government expenditures, and the budget deficit surpassed 20% of GDP. Annual inflation in 1984 was over 1,000%, and in 1985 the inflation rate topped 11,000%.¹²

These are all examples of extreme cases, but they serve to put the U.S. experience in perspective. Even in instances of much more modest federal government credit demand, there remains the possibility that the Federal Reserve might seek to mitigate any upward pressure on interest rates due to the Treasury's borrowing needs at the risk of pushing up the inflation rate. But as long as the Treasury can find buyers for its securities in private credit markets, the Federal Reserve will likely find it easier to pursue an anti-inflationary policy.

In any country with a large government debt there may be temptation to reduce the real value of that debt with inflation. In cases where that is perceived to be a real possibility, nominal interest rates may be higher than they otherwise would be because investors demand a higher rate of return to protect themselves from the possible decline in the value of their assets. The independence of the Federal Reserve is generally believed to reduce the possibility that will happen.¹³

Government Debt in Other Industrialized Countries

Short of the extreme examples cited in the previous section, it is useful to compare the federal government debt in the United States with that of other developed countries. The United States is not the only country whose central government has issued a significant amount of debt.

Among the countries shown in **Table 2** are all those participating in the European Economic and Monetary Union (EMU). These are the countries who now use the Euro as their currency. The Maastricht Treaty established conditions for European Union countries' participation in the EMU. Among them was the condition that a member country's public sector financial condition must be "sustainable." In particular, the standards for assessing the sustainability of public sector finances were that the public sector deficit not exceed 3% of GDP, and that the public sector debt not exceed 60% of GDP. More than half of the Euro countries now have debt-to-GDP ratios above 60%.

¹¹ William A. Bomberger and Gail E. Makinen, "The Hungarian Hyperinflation and Stabilization of 1945-1946," *Journal of Political Economy*, vol. 91, no. 5 (1983), pp. 801-824.

¹² Juan-Antonio Morales, "Inflation Stabilization in Bolivia," in Michael Bruno et. al., eds., *Inflation Stabilization* (MIT Press, 1988), pp. 307-346.

¹³ See CRS Report RL31056, *Economics of Federal Reserve Independence*, by Marc Labonte.

As the figures in **Table 2** indicate, the United States is far from having the largest government debt. Of the 17 countries shown, five had a higher debt-to-GDP ratio in 2009 than did the United States. Twelve countries increased their debt ratio between 2000 and 2009. Four of the countries had public debt larger than their GDP in 2009.

Table 2. Gross General Government Debt as a Percentage of GDP

Country	2000	2009
Austria ^a	71.1	72.9
Belgium ^a	113.8	101.2
Canada	82.1	82.8
Finland ^a	52.3	43.7
France ^a	65.6	84.5
Germany ^a	60.4	77.4
Greece ^a	114.9	114.9
Ireland ^a	40.2	65.8
Italy ^a	121.0	123.6
Japan	135.4	189.3
Luxembourg ^a	9.2	18.2
Netherlands ^a	63.9	71.4
Portugal ^a	62.0	83.8
Spain ^a	66.5	59.3
Switzerland	52.5	44.4
United Kingdom	45.1	71.0
United States	54.4	83.9

Source: Organization for Economic Co-operation and Development.

a. Member of the European Economic and Monetary Union (Euro country).

Conclusion

It appears that the federal debt is likely to rise significantly in the near future. The Congressional Budget Office now projects the budget to be in deficit through 2020. In the current economy, however, there is significant slack and debt growth is likely to affect aggregate demand much more than prices or interest rates.

At current and even at projected levels, most economists would agree the debt poses little immediate risk to economic stability. But continued deficits on the order of 10% of GDP eventually might, and are likely unsustainable. Ultimately the risk of a very large, and rapidly growing, government debt is extremely high rates of inflation, as pressure would mount on the Federal Reserve to monetize the debt.

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